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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,226	10/28/2003	William Reinisch	074078.0122	4946
5073	7590	03/30/2006	EXAMINER	
BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			TRINH, SONNY	
			ART UNIT	PAPER NUMBER
			2618	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/695,226

Applicant(s)

REINISCH ET AL.

Examiner

Sonny TRINH

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32 is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-18, 20-26 and 28-31 is/are rejected.
- 7) ☒ Claim(s) 12, 19 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements filed on 10/28/03 and 01/27/04 have been considered and placed in the application file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. **Claims 1, 15, 30** are rejected under 35 U.S.C. 102(a) as being anticipated by Harel et al. (hereinafter "Harel"; U.S. Patent Application Publication number 2003/0002594 A1).

Regarding **claims 1 and 15**, with reference to figure 4 and its description on page 4, Harel discloses a method and system for amplifying diversity transmit signals, comprising:

receiving a transmit signal at a vector modulator (figure 4, Vector Modulator 471 with input signals), the vector modulator operable to process the transmit signal to yield a plurality of diversity transmit signals (figure 4, diversity antennae 490, 495);

amplifying each of the plurality of diversity transmit signals according to a gain using at least one power amplifier (figure 4, outputs from the Vector Modulator 471 are inputted to the Power Amplifier 473 and 474); and

transmitting the plurality of amplified diversity transmit signals at a plurality of antennas (figure 4, diversity antennae 490, 495).

Regarding **claim 30**, this claim merely reflects the means as opposed to the method and system claim of claim 1, 15 and is therefore rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 2, 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Harel in view of Green Jr. (hereinafter "Green"; U.S. Patent number 5,701,595).

Regarding **claims 2 and 16**, Harel discloses the invention but does not disclose the steps of passing each of the plurality of amplified diversity transmit signals through one or more loads, each load having a load impedance matching an antenna impedance corresponding to an antenna of the plurality of antennas.

In an analogous art, Green discloses a half duplex RF transceiver having low transmit path signal loss. Green further teaches that the transmitter has a load for impedance matching (figure 6A, columns 5-6).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the impedance matching, as taught by Green, into the system of Harel so that unwanted interference between the antennae can be prevented, when the transmitting signal is transmitted and the receiving signal is received at the other antenna.

4. **Claims 3, 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Harel.

Regarding claims 3 and 17-18, Harel discloses the invention but does not disclose that the vector modulator and the at least one power amplifier and one load are located at a common substrate. However, integrating multiple components using the same substrate is well known and widely used in the integrated circuit field and the Examiner takes Official notice of such integration. The motivation for integrating multiple components on the same substrate is for achieving volume reduction and the cost reduction of a monolithic integration.

5. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Harel in view of Lindskog et al. (hereinafter "Lindskog"; U.S. Patent number 6,865,377).

Regarding **claim 4**, Harel discloses the invention including the adjusting of the phase of the output signal ([0022] – [0023], [0046]), but does not disclose the steps of adjusting the amplitude of at least one of the at least two transmit signals.

In an analogous art, Lindskog discloses a combined open and closed loop beam forming in a multiple array radio communication system (abstract). Lindskog further teaches that the transmit diversity signal can be phase and amplitude adjusted before

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being transmitted (columns 3-4, specifically lines 44-54 of column 3 and lines 51-61 of column 4).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the adjusting of the phase and amplitude of the diversity transmit signal, as taught by Lindskog, into the system of Harel so that the transmit diversity parameters can be fine tuned for each remote terminal.

6. **Claims 5, 7-11, 13-14, 20, 22, 24-26, 28-29, 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Harel in view of Azuma (U.S. Patent Number 5,960,330).

Regarding **claim 5**, Harel discloses a method for amplifying diversity transmit signals (abstract), comprising: receiving two or more transmit signals (see figure 4, radio subsystems 476, 477) and a control signal (figure 4, control logic 472), amplifying the two or more transmit signals according to the at least one gain of the plurality of gains; and transmitting the two or more amplified transmit signals using a plurality of antennas (paragraphs [0029] – [0046]). However, Harel does not explicitly disclose that the control signal comprising a gain path selection; selecting for each transmit signal at least one gain path from a plurality of gain paths according to the gain path selection of the control signal, each gain path of the plurality of gain paths associated with at least one gain of a plurality of gains.

In an analogous art, Azuma discloses a method for amplifying diversity transmit signals (abstract), Azuma further teaches that the control signal comprising a gain path selection; selecting for each transmit signal at least one gain path from a plurality of

gain paths according to the gain path selection of the control signal, each gain path of the plurality of gain paths associated with at least one gain of a plurality of gains (column 2 line 57 to column 3 line 59).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the path selection, as taught by Azuma, into the system of Harel so that the transmit power can be adjusted corresponding to the receive diversity gain.

Regarding **claim 7**, Azuma further teaches that the control signal comprises an internal control signal (figure 1, see control logic 8).

Regarding **claim 8**, Azuma further teaches that the control signal comprises an external control signal (column 3 lines 8-59, the path is selected by the signal received from the mobile station).

Regarding **claims 9-11**, the combination of Harel and Azuma discloses the invention but does not disclose that the one or more power amplifiers collectively yielding the at least one gain of the plurality of gains; and the at least one gain comprises a gain in a range of 5 dB to 15 dB or in a range of 23 dB to 31 dB nor the high gain having 25 dB and low gain having 12 dB. However, the power amplifiers with different ranges such as 5 dB to 15 dB or 23 dB to 31 dB are nothing more than different power classes which are well known and widely used in the telecommunication systems and the Examiner takes Official notice of the different power classes. The motivation for using different power classes are for the compatibility with the different cellular bands.

Regarding **claim 13**, Azuma further teaches the selecting of at least one gain path for each transmit signal from a plurality of gain paths according to the gain path selection of the control signal further comprises: selecting a first gain path for a first transmit signal according to the control signal; and selecting a second transmit signal according to the control signal (column 3, specifically lines 27-36).

Regarding **claim 14**, it is inherent in Azuma that the selection of the first gain path is performed substantially simultaneously with the selection of the second gain path, since the invention relates to diversity gain controlled transmission.

Regarding **claims 20, 22-26**, these claims merely reflects the means for performing the method steps of claim 5, 7, 8-11 (respectively) and are therefore rejected for the same reasons.

Regarding **claim 28**, Azuma further discloses the first switch and a second switch, the first switch operable to select a first gain path for a first transmit signal according to the control signal, the second switch operable to select a second transmit signal according to the control signal (see figure 1 and description).

Regarding **claim 29**, it is inherent that the first switch and the second switch select the first gain path and second gain path substantially simultaneously so that no more than 1 signal is selected.

Regarding **claim 31**, this claim merely reflects the means for performing the method steps of claim 5 and is therefore rejected for the same reasons.

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7. **Claims 6, 21, 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Harel in view of Azuma and in further view of Green Jr. (hereinafter "Green"; U.S. Patent number 5,701,595).

Regarding **claims 6 and 21**, the combination of Harel and Azuma discloses the invention but does not disclose the steps of passing each of the plurality of amplified diversity transmit signals through one or more loads, each load having a load impedance matching an antenna impedance corresponding to an antenna of the plurality of antennas.

In an analogous art, Green discloses a half duplex RF transceiver having low transmit path signal loss. Green further teaches that the transmitter has a load for impedance matching (figure 6A, columns 5-6).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the impedance matching, as taught by Green, into the system of Harel and Azuma so that unwanted interference between the antennae can be prevented, when the transmitting signal is transmitted and the receiving signal is received at the other antenna.

23. The system of Claim 20, wherein the control signal comprises an external control signal.

Allowable Subject Matter

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8. **Claims 12, 19 and 27** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claims 12 and 27**, the applied references fail to disclose or render obvious the claimed limitations wherein each gain path comprises one or more amplification stages of a plurality of amplification stages, the one or more amplification stages operable to yield the associated gain; the plurality of gain paths comprises a first gain path and a second gain path; the plurality of amplification stages comprises a first plurality of amplification stages and a second plurality of amplification stages; the first gain path is associated with the first plurality of amplification stages and the second gain path is associated with the second plurality of amplification stages; and the first plurality of amplification stages is substantially different from the second plurality of amplification stages.

Regarding **claim 19**, the applied references fail to disclose or render obvious the claimed limitations wherein the vector modulator further operable to process the transmit signal to yield the plurality of diversity transmit signals by:

- splitting the transmit signal to yield at least two transmit signals;
- adjusting a phase of at least one of the at least two transmit signals;
- adjusting the amplitude of at least one of the at least two transmit signals; and
- generating the plurality of diversity transmit signals according to the adjusted transmit signals.

Regarding **claim 32**, the applied references fail to disclose or render obvious the claimed limitations wherein the system for amplifying diversity transmit signals, comprising:

a power amplifier module operable to:

receive two or more transmit signals and a control signal, the control signal comprising a gain path selection and one of a received internal control signal or an external control signal;

select for each transmit signal at least one gain path from a plurality of gain paths according to the gain path selection of the control signal, each gain path of the plurality of gain paths associated with at least one gain of a plurality of gains and comprising one or more power amplifiers, the one or more power amplifiers collectively yielding the at least one gain of the plurality of gains; and

amplify the two or more transmit signals according to the at least one gain of the plurality of gains, the at least one gain comprising a high gain and a low gain, the high gain having 25 dB, the low gain having 12 dB;

a plurality of antennas for transmitting the two or more amplified transmit signals; and

one or more loads for passing through each of the two or more amplified diversity transmit signal, each load having a load impedance matching an antenna impedance corresponding to an antenna of the plurality of antennas.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/21/06


SONNY TRINH
PRIMARY EXAMINER